

Improve Energy Efficiency with Energy Efficient Electric Water Heating

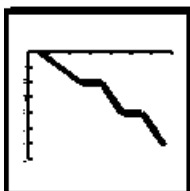
Builder Guide



DESCRIPTION

Water heating can constitute up to 25 percent of the energy use of a home. Minimum efficiency electric water heaters can cost over \$500 per year to operate. High-efficiency electric water heaters are available that can reduce annual operating costs by \$100 or more.

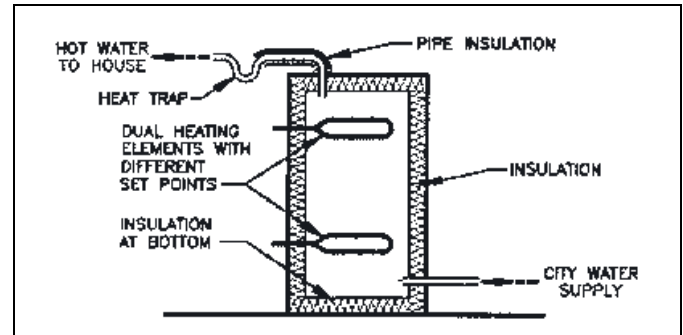
High-efficiency electric water heating comes in three varieties: electric resistance, heat pump water heaters and desuperheaters. Electric resistance water heaters can include two types of energy efficiency features: extra thick foam insulation to reduce heat loss, and independently-operating heating elements to optimize water temperatures. These heating elements are typically located at different depths in the water storage tank and are controlled by different thermostats. Only the top element will turn on, thereby reducing the amount of electricity used to maintain overall hot water temperature. Heat pump water heaters can save even more energy. They heat water by extracting heat from the surrounding air. Heat pump water heaters can save 50% or more compared to electric resistance water heaters. Desuperheaters are heat exchangers attached to the condenser of an air conditioner or heat pump. They can use original equipment or be retrofitted. Since they capture waste heat from the air-conditioner or heat pump compressor, they supply almost free hot water during much of the cooling season. Desuperheaters can also be configured to supply all household hot water.



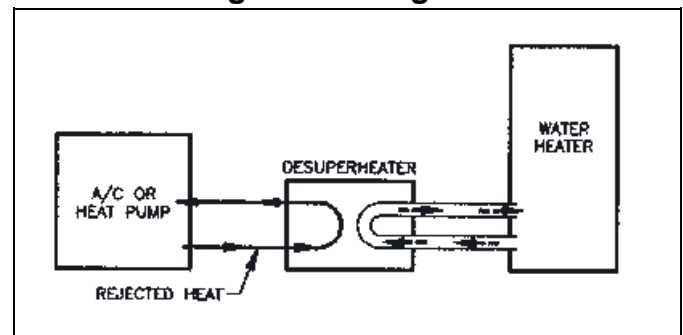
BENEFITS

Providing energy efficient houses with high efficiency water heating can cost effectively lower home buyers' utility bills.

Key Features of Energy Efficient Electric Water Heaters



Desuperheaters Provide Free Hot Water during the Cooling Season



☐ Energy efficient electric water heating saves money.

High efficiency electric resistance water heaters can reduce heating bills by 10 - 20% over a minimum efficiency electric resistance water heater. Heat pump water heaters and desuperheaters can save up to 50%. For a typical household this can mean significant annual savings.

☐ Installation of high efficiency electric resistance water heaters is hassle- free.

Contractors are already experienced in the installation of electric resistance water heaters. Providing high-efficiency electric water heaters in your houses usually requires minimal changes to construction practices.

- ☐ **Heat pump water heaters can supply free cooling and dehumidification.**

The natural by-product of heat pump water heaters is air conditioning and dehumidification that can be useful in climates with significant cooling requirements.



INTEGRATION

- ☐ **Installation of heat pump water heaters and desuperheaters requires coordination with subcontractors.**

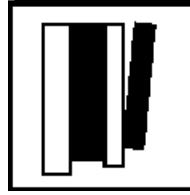
Condensate drains and refrigerant piping are required for heat pump water heaters. Additionally, proper insulation and convection loops are required as part of effective piping designs. Plumbing and HVAC crews should be familiar with the installation requirements of heat pump water heater and desuperheater equipment.

- ☐ **Using high-efficiency appliances ensures that first costs of water heating equipment are minimized.**

Use of energy efficiency dishwashers and clothes-washers, along with low-flow faucets and showerheads can further reduce hot water requirements, thereby allowing installation of smaller less-costly water heaters. See the Builder Guide fact sheet on "Energy Efficient Appliances" for more information.

- ☐ **Water piping systems should also be properly designed and insulated to minimize heat losses.**

Heat losses from piping systems can be responsible for degrading the efficiency of a water heater by more than 10%. To get the most out of high efficiency water heaters, well-insulated piping systems with heat traps should be installed.



RESOURCES

- ☐ For more information on ENERGY STAR HVAC Program and qualifying equipment, call 1-888-STAR YES.
- ☐ *GAMA Directory of Certified Efficiency Ratings for Residential Heating and Water Heating Equipment*, Gas Appliance Manufacturers Association, 1996. Available at 703-525-9565.
- ☐ Your local utility may offer assistance in choosing high-efficiency water heating equipment.